



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/516,494

09/26/2005

Jung-won Kang

29137.004.00

4929

30827

7590

05/19/2009

MCKENNA LONG & ALDRIDGE LLP
1900 K STREET, NW
WASHINGTON, DC 20006

EXAMINER

WALTERS JR, ROBERT S

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

05/19/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/516,494	Applicant(s) KANG ET AL.	
	Examiner ROBERT S. WALTERS JR	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 6-10 is/are pending in the application.
- 4a) Of the above claim(s) 8-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6 and 7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Application

Claims 4 and 5 are cancelled. Claims 1-3 and 6-10 are pending. Claims 8-10 are withdrawn. Claims 1-3, 6 and 7 are presented for examination.

Response to Arguments

Applicant's arguments with respect to claims 1-3, 6 and 7 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

Claim 2 is objected to because of the following informalities: The claim recites “is selected from the consisting of” which should be changed to “is selected from the group consisting of”. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1792

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 1-3, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ko et al. (U.S. PG PUB No. 2001/0055891) in view of Lau et al. (U.S. Pat. No. 6313185).

I. Regarding claims 1 and 6, Ko teaches a organosilicate polymer and a method for preparing an organosilicate polymer by mixing a pore-forming component, which may be a thermally decomposable organic silane compound having formula I, $R^3_p Y_{3-p} Si-M-Si R^4_q Z_{3-q}$, where R^3 and R^4 can be hydrogen and Y and Z can be an alkoxy such as methoxy (see Ko at claim 2 and 0049), and wherein the organic component M is a decomposable organic group (see

Art Unit: 1792

Ko at claim 2 and 0036) and a silane compound or oligomer that can have the formula II as is claimed (see 0028,0049 and claim 2) and then adding water and a catalyst to conduct hydrolysis and condensation (0037) to form covalent bonds between the two compounds. Ko teaches that the organic substance can be decomposed at 450 °C or less and may be an alkylene or arylene group (see Ko at claim 2). Ko fails to teach that the decomposable organic group may be a polyalkyleneoxide. However, Lau teaches a method for forming porous materials from polymers by having portions of the polymers carry a thermolabile group and then removing these groups to provide the pores (abstract). Lau further teaches that preferred thermolabile groups that degrade in the temperature range of 250-400 °C include polypropyleneoxides (column 6, lines 19-32). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Ko's polymer and method by utilizing a polyalkyleneoxide, such as polypropyleneoxide in place of Ko's alkylene or arylene groups. One would have been motivated to make this modification as one of ordinary skill in the art at the time of the invention could have made this particular substitution with a reasonable expectation of success (given that Lau is utilizing the polyakyleneoxide for the same purpose that Ko is utilizing the alkylene or arylene groups), and the predictable result of providing a polymer that can be heated to produce a porous film.

II. Regarding claim 2, Ko teach in view of Lau teach all the limitations of claim 1, but fail to teach the particular compounds as claimed. However, Ko does teach compounds of formula I (see above), where M is an organic group and R^3 and R^4 can be alkyl, while Y and Z can be an alkoxy, where p and q are integers from 0-2 (see Ko at claim 2). Lau teaches utilizing

Art Unit: 1792

polypropyleneoxide as a thermolabile group (see above). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Ko in view of Lau's method to utilize bis-methyldimethoxysilylpropyl polypropyleneoxide as the decomposable organic silane. One would have been motivated to make this modification as one of ordinary skill in the art could have substituted this particular compound for the generic compounds taught by the combination fo Ko in view of Lau with a reasonable expectation of success. One would have had a reasonable expectation of success, because the compound has two alkoxy groups for cross-linking to form a network polymer and it has the thermolabile organic group that would decompose upon heating to form a porous film. Furthermore, the results of this substitution would be predictable, namely that it would provide a similar organosilicate polymer that can be heated to provide an insulating film.

III. Regarding claim 3, Ko in view of Lau teach all the limitations of claim 1, but fail to teach the weight average molecular weight of the polyalkyleneoxide being from 300 to 100,000.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention that the molecular weight of the polyalkyleneoxide would determine the size of the resultant pore upon thermolysis and removal of this component. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to choose the instantly claimed range for the molecular weight to provide the desired pore size through process optimization, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

See In re Boesch, 205 USPQ 215 (CCPA 1980).

IV. Regarding claim 7, Ko in view of Lau teach all the limitations of the organosilicate polymer of claim 6 (see rejection above) and Ko further teaches a coating composition (see 0049-0050) comprising the organosilicate polymer (see above) and an organic solvent (0050).

Pertinent Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Stucky et al. (U.S. PG PUB No. 2003/0205528)

Conclusion

Claims 1-3 and 6-10 are pending.

Claims 8-10 are withdrawn.

Claims 1-3, 6 and 7 are rejected.

No claim is allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

Art Unit: 1792

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT S. WALTERS JR whose telephone number is (571)270-5351. The examiner can normally be reached on Monday-Friday, 8:00am to 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571)272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael Barr/
Supervisory Patent Examiner, Art Unit
1792

/ROBERT S. WALTERS JR/

Application/Control Number: 10/516,494

Page 8

Art Unit: 1792

May 18, 2009

Examiner, Art Unit 1792